



Government of Kerala
കേരള സർക്കാർ
2007

Reg. No. என். என்பு
KL/TV(N)/12/2006-2008

KERALA GAZETTE

കേരള ഗസറ്റ്

PUBLISHED BY AUTHORITY

ആധികാർികമായി പ്രസിദ്ധീകരിച്ചത്

Vol. LII | Thiruvananthapuram, Tuesday
நூற்று 52 | திருவாந்தாபுரம், திங்கள்

11th September 2007
2007 ഓസ്റ്റ്‌വാല്പഠ് 11
20th Bhadra 1929
1929 ഓസ്റ്റ്‌വാല്പഠ് 20

No. 36
mm. 3

PART III

Department of Electrical Inspectorate

八九〇年四月

காலாந்த குழு, 5/1953 மார்ச்/நவ., ம. நூல்.

Digitized by srujanika@gmail.com

କାହାରେ କାହାରେ କାହାରେ
କାହାରେ କାହାରେ କାହାରେ
କାହାରେ କାହାରେ କାହାରେ

(“**אָבָה**”)
אָבָהָבָה,
אָבָהָבָה
אָבָהָבָה

2000-01-02-00000000

‘പ്രാഥ’ (സി.എസ്.എം) സ്കൂള് പ്രൈമറി സർക്കാർ സ്കൂള്
‘പ്രാഥ’ പ്രാഥമ്യ പാരിഷ - 2007

DETAILS OF ELECTRICAL SUPERVISOR 'B' GRADE EXAMINATION—2007

PART I

PART—I

Basic Electrical Engineering—Theory

Maximum Marks—100. Time—3 Hours.

1. Principles of Electricity:

DC Electric pressure, current and resistance, Ohm's Law, Kirchhoff's Law—Specific resistance, Law of Ohm and their application for calculating voltage drop, Series and parallel circuits, Practical unit of voltage, current, resistance, power and energy, Relation between electrical power unit (KW) and mechanical power unit (H.P.), Inductance, Capacitance, Reactance, Impedance.

2. Electromagnetism.—Producing of E.M.F.—Faraday's and Lenz's Laws and Fleming's hand rules, Magnetic, chemical and heating of electric current, Magnetic properties of material, Permeability Hysteresis Electromagnets and their application.

3. Materials—Conductors—Semi conductors and insulators classes of insulation—Insulating materials and their relative merits, Transformer Oil, Effect of heat and moisture on insulation, Lubricants and their uses—Dielectrics—Dielectric strength, permittivity.

4. Circuits.—Series, Parallel, Series, Parallel circuits, Phasors addition, subtraction, multiplication and division, Complex impedance—Phase Sequence Simple L. C. P. circuit and solutions—Star delta connections and transformations, Power and power factor—Net work solutions, 3 phase circuits balanced and unbalanced load—Symmetrical components and sequence impedance.

5. Generation of Electricity.—(a) A. C. Generators—Constructive features and essential components—E. M. F. equation—Synchronous Reactance Regulation, Voltage control—Synchronising, Synchroscope—Bright lamp and dark lamp methods.

(b) D. C. Generators—Essential components and constructive features, Shunt, Series and compound dynamos and their characteristics, Classes of Sparking, Interpoles, Commutators and their maintenance, Carbon brushes, their adjustment and methods of voltage regulation.

6. Transformer.—Single phase and 3 phase transformers—Constructive features—Transformation ratio, Voltage and current equations—Magnetising current, leakage reactance, 3 phase connections and vector group equivalent circuit—Core and copper losses, Efficiency Auto transformers, Temperature rise, Scott connection, Instruments transformers, Tertiary windings, open circuit and short circuit tests.

7. Motor.—(a) A. C. Motors—Rotating magnetic field, Single phase induction motor—Different types—Working principle, 3 phase induction rotors—Squirrel cage and slipring—Methods of starting, Sliprings—Slip characteristics, No load and blocked rotor tests—Efficiency—Circle diagram and determination of characteristics—Synchronous motors, Commutator motors.

(b) D. C. Motors—Theory of series, shunt and compound wound motor, their uses, installation methods of starting and speed control and reversal of direction.

8. Generators.—Motors, generators and rectifiers—Single phase and 3 phase battery chargers—Voltage equation—Filtering, Half wave, full and bridge rectifiers.

9. Batteries.—Primary cells, Dry cells, Storage or secondary batteries—Constructive feature of storage batteries or accumulators and their installation, Lead acid cells, Nickel iron or alkaline cells, Initial and subsequent charging of batteries, charging circuits and their calculations, Series and parallel circuits, Maintenance of batteries, Use of hydrometer.

10. Transmission and Distribution.—Line constants—Determination of voltage drop, Regulation—Short, medium and long lines, Ferranti effect—Economic size of conductor—Corona loss—Power loss—Design of a ground conductor—Lightning arrestor.

11. Constructional feature of L. G. Cables—Fault location—Murray and valley loop tests, changing currents.

PART-II

Basic Electrical Engineering—Application

Maximum Marks—100. Time—3 Hours.

1. Design of Electrical Installation.—Load survey—Domestic—Commercial and Industrial installations.

Connected load—Maximum demand—Demand factor—Diversity load—Selection of substation site—Transformer capacity—Selection of distribution voltage—Main and sub-switch boards—Distribution fuse board—M.C.C.—P.M.C.C.—P.C.C. distribution layout—Location of switch boards—Fault level calculations.

2. Selection of Equipment.—Different types of breakers—O. C. B.—A. C. B.—M. C. C. B.—M. C. B.—Contractors, Breaking capacity—Making capacity, Selection of Distribution fuse board—Continuous rating—H. R. C. fuse prospective currents—Cut off values—Selection of major and minor fuses—Gardling switch boards, design of outlets, fabrications, design—Parameters—T. B. A. regulations, Cable short time and continuous rating—Derating factor—Methods of laying—Design aspects—different type of cables—Household areas—Motors—Section method of starting, D. C. Motors—Speed control, Limitation on starting current and voltage drop—System disturbance, High voltage motors, Protection—circuitors—Power factor improvement selection and method of connection—special type transformers—Furnace transformers—Welding transformers—Rectifier transformers—scott connection, tertiary winding—Captive generation—Determination of capacity—Load segregation, double bus system charge over arrangement, I. S. Regulations.

3. Protection—Basic methods of Transformer, Generator, Motors and Breaker protection, Thermal and magnetic release—Relays—I.D., M.T. instantaneous type—over current, Earth fault and earth leakage relays—Time and current setting, G.Ts, Specification and error factors P.Ts, Single relays I.S. Regulations.

4. Earthing—Determination of size of earth bus, number of earth electrodes—Plate, Pipe and strip electrodes—Resistivity of soil—Measurement—Computation of earth resistance—Different materials used for

earthing conductors-Current densities-Corrosion factors-Disposition of electrodes-joints in earth conductors. Size of earth conductors for equipments of various capacities. Earth continuity-wire-earth continuity resistance. U. S. Regulations.

5. *Cable Jointing*.—Aluminum and copper cable joints—Type precautions—Termination—I. S. Requirements.

6. *Clearances*.—Statutory clearances of live parts from ground and building.—A sectional clearance.—Equipment clearance.—With boards clearances inside and outside.—Oil containing equipments.—Indoor and outdoor equipment clearances.

7. *Special Type of Installations.*—X-ray, Neon, Sign Lift, Cinema installations—Relevant Rules, circuitary Safety precautions—Earthing wire Precautionary-precautionary measures—Energy meters—Try vector method—Installations and computations of energy.

8. *Testing and Maintenance*.—Insulation Tester—Earth Tester—Relay testing kit. Schering bridge Break down test of oil—Single phase and 3 phase energy meter testing—Voltmeter—Ammeter—Wattmeter—Different installations—Recommended values of insulation resistance—Earth resistance measurements. Desired values Continuity measurements Relay testing Maintenance of various electrical installations—Relevant standards and regulations.

9. *Rules and Standards*.—Indian Electricity Act and Rules, Kerala Cinema Regulation Rules—Kerala Electricity Licensing Board Rules—Provisions applicable to consumers and contractors in particular I. S. specifications I. E. C. Regulations.

PART III

Practical and Viva Voce. Maximum Marks—100

A practical examination based on the syllabus in Part I will be held.

46.—The candidate should obtain 50% in Part II for a pass.

**Electrical Supervisor Grade 'B' Competency
Certificate and Period.**

(ii) The successful candidates will be eligible for getting Supervised Experience Certificate and permit as follows:

(a) Those who pass the examination and receive marks upto and including 100—All Low Voltage Installations and Medium Voltage Installations upto 25 K.W.

(b) Those who pass the examination and receive marks above 180—“All Low Voltage Installations and Medium Voltage Installations up to 3 kV.”

(b) Application for calculating the scope of the Electrical Supervisor for the wall to be considered valid after one year from the date of issue of the permit of Concreteness.

卷之三

సాంస్కరిక వ్యవస్థలో "ప్రాచీనమానికి" అనుమతించినిటి వాయిదాలో విన్ని విభజించిని" 2007 లో "ప్రాచీన వాయిదాల ప్రమాదాల క్రితికలో విభజించి విన్ని విభజించిని" అనుమతించిని. విభజించిని విభజించిని.

1. అంధారాకులు 2. పూర్వాంగము

卷之三

(ఎంటు) శిఖించు వాయిదాలు వ్యాపకంగా పూర్వం వ్యక్తిగత విషయాలలోనే, ప్రాచీన విషయాలలోనే వాయిదాలు వ్యాపించిని+ కూడా సాధించిన విషయాలలోనే “ప్రాచీన విషయాలలోనే విషయాలలోనే” అనిపాతికించాలి.

ஏதுமிருந்தாலும் அது நிலைமை காரணமாக வரும், எனவே மாது மாதங்களுக்கு அது விரிவாக வரும். எனவே முறையில் விரிவாக, நிலைமையில் விரிவாக "நிலைமை வழி" என்று அவ்வளவுக்காக வழிமுறை என்று விவரிக்கப்படுகிறது. எனவே முறையில் விரிவாக, நிலைமையில் விரிவாக வழிமுறை என்று விவரிக்கப்படுகிறது.

(2) (a) மதுவினாக் குதிரைகளை

(3) සංඝ සංඝ

“**କାହାରେ କାହାରେ କାହାରେ କାହାରେ କାହାରେ କାହାରେ**” ଏହାରେତ୍ତାହାରେ
କାହାରେ କାହାରେ କାହାରେ କାହାରେ କାହାରେ କାହାରେ

